

Section No. 6.0  
Revision No. 0  
Date: 4/1/95

## **6.0 Data Quality Objectives for Measurement Data**

### **6.1 GENERAL QAPP OBJECTIVES**

The purpose of the Montana Water Quality Assurance Project Plan is to provide guidelines and procedures for the water monitoring quality assurance (QA) program. It is intended to serve as a reference document for implementation and expansion of the quality assurance program and provides detailed operational procedures for measurement processes used by the DEQ. The QAPP should be particularly beneficial to operators, project officers, and program managers responsible for implementing, designing and coordinating water monitoring projects. The QAPP is a compilation of quality assurance principles, practices, guidelines, and procedures that are applicable to water parameter measurement systems. They are designed to achieve a high percentage of valid data samples while maintaining integrity and accuracy.

## 6.2 MEASUREMENT DATA QUALITY OBJECTIVES

As water monitoring measurement systems increase in both cost and complexity, it becomes essential that the DEQ have methodologies that shall, in a cost-effective manner, establish and increase the completeness, precision and accuracy of the data produced by the DEQ's measurement systems.

A. All data shall be of a known and documented quality. The level of quality required for each specific monitoring project shall be established during the initial planning stages of the project and will depend upon the data's intended use. Two major measurements used to define quality are accuracy and precision. Accuracy is defined as the closeness of the measured value to the true value and precision is defined as the repeatability of the data (actually the repeatability of the measurement system).

B. All data shall be comparable. This means all data shall be produced in a similar and scientific manner. The use of the standard methodologies for sampling, calibration, auditing, etc., found in the QAPP should achieve this goal.

C. All data shall be representative of the parameters being measured with respect to time, location and the conditions from which the data are obtained. The use of the standard methodologies contained in the QAPP should insure that the data generated is representative.

D. Ideally, a 95% confidence of both precision and accuracy should be maintained with a  $\pm 15\%$  difference or better between an actual amount of an introduced parameter (to a measurement system) and the indicated response of the measurement system.

E. The QAPP must be dynamic to continue to achieve its stated goals as techniques, systems, concepts, and project goals change.

F. Data Quality Objectives ( DQOs) are statements of the level of uncertainty that a decision maker is willing to accept in results derived from a water quality study, when the results are going to be used in a regulatory or programmatic decision. To be complete, these quantitative DQOs must be accompanied by clear statements of:

- the decision to be made;
- why water quality data are needed and how they will be used;
- time and resource constraints on data collection;
- descriptions of the data to be collected;
- specifications regarding the domain of the decision; and

Section No. 6.0  
Revision No. 0  
Date: 4/1/95

- the statistical calculations which shall be performed on the data.

Not all water quality studies shall require DQOs. Some water quality monitoring is conducted with no expectation that the data is needed to make a regulatory or program decision. Ambient or baseline water quality monitoring, or long-term trend monitoring, may not involve a regulatory or program question. For complaint investigations, which require immediate response and are of short duration, DQOs may be impractical. Routine compliance monitoring or drinking water supply monitoring may not ultimately involve a regulatory or program decision. However, such programs should identify the situations or conditions under which a more intensive data collection study would be triggered (for example, determining non-compliance or taking an enforcement action).